

- Meeting Summary-

Day 1: April 7, 2011 - (8:30 a.m. – 5:00 p.m. PDT)

1. Welcome

The meeting was called to order at 8:30 a.m., April 7, 2011, by the Chair of the Delta Independent Science Board (Delta ISB), Dr. Richard Norgaard. All ten members of the Delta Independent Science Board were present: Brian Atwater, Tracy Collier, Michael Healey, Edward Houde, Judy Meyer, Jeffrey Mount, Richard Norgaard, Vince Resh, and John Wiens.

Norgaard welcomed participants, and asked present members of the Delta ISB if there were any new disclosures to report. Only Mount had any changes to report regarding disclosures, all others remained the same as previously reported.

New Disclosure Reported:

Mount: Temporarily working as the Acting Director for the Center for Watershed Science at the University of California at Davis. As such, he will recuse himself from any decisions regarding federal or state contracts in the Delta.

Delta Science Program Staff in attendance: Marina Brand, Lauren Hastings and Gina Ford.

2. Lead Scientist Report

The Lead Scientist report was presented by Dr. Cliff Dahm, Lead Scientist for the Delta Science Program. Items discussed included:

- The Interagency Ecological Program (IEP) had their Annual Workshop on March 30, 2011. The focus was on near-shore fishes.
- Thirteen proposals (approximately \$7.1 million) have been selected for funding as a result of the 2010 Proposal Solicitation. Dahm received approval to award the contracts to the selected grant recipients from the Delta Stewardship Council at its March 24-25, 2011 public meeting.
- The Delta Science Program will be hosting, at the request of the National Marine Fisheries Service, a Salmonid Life Cycle Models Workshop on April 13, 2011.
- Dahm will be the co-chair of the annual NABS meeting in May which will focus on global water crises.

Dahm next discussed the Science Program's work on the Delta Plan. He stated that the first and second drafts were being integrated to help create the third draft, that a clear unified structure will be provided in each of the subject issue chapters, and that the Policies and Recommendations will be justified by the narrative.

Meyer then asked Dahm if that meant that the Findings within the Delta Plan were equivalent to Problem Statements. Dahm replied that the Findings will become Problem Statements in the third draft. Wiens asked if the Delta Plan would address the gaps in knowledge and uncertainties. Dahm replied that they would try.

Norgaard provided the public present the opportunity to comment, and no comments were made.

3. Group Discussion with various authors of the Delta Plan

In addition to the members of the Delta ISB and Delta Science Program Staff, the following authors of the Delta Plan were present for the discussion: Phil Isenberg, Joe Grindstaff, Gwen Buchholz, Jessica Pearson, Lindsay Correa and David Christophel.

Norgaard opened the discussion by asking those authors present to briefly introduce themselves. In addition to introducing himself, Grindstaff stated that they are trying to prepare a programmatic document with regulatory authority and are struggling with a very tight timeline. In addition, there is no existing completed ecosystem restoration plan for the Delta that can be incorporated into the Delta Plan and given the time line they are on there is not sufficient time to complete one.

Healey asked the various authors what they considered the role of the Delta ISB to be, in regards to the development of the Delta Plan. Grindstaff replied that the Council is interested in two aspects: 1) Is the best available science incorporated into the Delta Plan and can it be defended; and 2) Determine if the state of knowledge/science is complete. Grindstaff noted that whatever is put into place will be modified as time goes by as part of the adaptive management process.

Isenberg stated that there were several areas that he would like the Delta ISB to assist with:

- Catch fatal errors in the document.
- Bring newly emerging science to the attention of the Council, as soon as possible.
- Assist with alerting the Council to the Best Available Science that can be used.
- When the Delta Plan EIR is released, provide the assistance described in the bullets listed above.
- Evaluate the document from a scientific perspective and provide those reviews to the Council. (i.e. Is it logical? Is it consistent?)

Multiple members of the Delta ISB expressed their concern regarding the role of the Delta ISB, in particular that their role should be strictly that of oversight, with respect to their review of the Delta Plan. Several members said there is a fine line between providing insight and oversight, and that the Board's role according to statute is strictly defined as oversight. This discussion also led to the topic of the independence of the Delta ISB, and whether or not an independent board should be engaged in a detailed review of drafts of a document (the Delta Plan) when they are required to provide an independent review of the completed (final) document.

Several members of the Delta ISB discussed the overall framework of the Delta Plan, stating that it reads more like a report than a plan. Specifically there is no Science Plan, a point emphasized by several of the Science Board members as being particularly important to the success of the

Delta Plan. It was felt that a Science Plan would be integral to the adaptive management component of the Delta Plan, and that adaptive management should be integrated throughout the Delta Plan.

Meyer raised a question regarding the geographic scope of the Delta Plan and asked how impacts to San Francisco (SF) Bay are considered within the Delta Plan and how routine operations are dealt with. Isenberg stated that the statute exempts routine operations as covered actions in the Plan. From a geographic standpoint, Suisun Marsh is the closest the Plan comes to the SF Bay and they have signed an agreement with the Bay Conservation Development Commission (BCDC) to coordinate activities as the BCDC regulates land use. Buchholz added that the Delta Plan takes water quality, pulse flows, and other issues that affect the SF Bay into account.

Isenberg then commented that the Sacramento San Joaquin Delta Reform Act of 2009 (Delta Reform Act) did not give the Council power over other state agencies. As a result, language that focuses on consistency with the Delta Plan will be included. Therefore, while the Delta Plan must address water quality issues, all authority to regulate it remain with the State Water Resources Control Board (SWRCB).

Meyer then stated that the SWRCB approach is to set Total Maximum Daily Loads after it has been determined that a water body is impaired. She asked if the Delta Plan addresses how to keep a system from becoming impaired? Isenberg stated that this was just one more example of the complications that need to be dealt with in the development of the Delta Plan. Buchholz stated that this is an example of why they are making development of the Delta Plan as transparent as possible. Collier stated that the second staff draft focused on drinking water quality with little discussion of ecosystem water quality, noting that ecosystem water quality is very important and needs to be addressed. Christophel indicated that they are still trying to determine if a discussion of ecosystem water quality should be in the water quality or ecosystem chapter. Grindstaff added that all of the key conflicts are about "how much water." Water quality is a fundamental driver of the system.

The last subject discussed during this portion of the agenda was about monitoring and data management. Houde stated that monitoring was very important and not an area where costs should be cut. Wiens added that he considered data management to be second in importance, just after monitoring. Hastings stated that a missing component of existing monitoring programs is the analysis, synthesis and evaluation of the data that are collected. Several Science Board members felt that monitoring and data management plans should be explicitly built into the framework of the Delta Plan.

Norgaard provided the public present the opportunity to comment, and no comments were made.

4. Delta ISB Discussion of portions of the Second Draft

See notes under agenda item 5, as item 4 was merged with item 5 during the meeting.

5. Review draft Delta ISB statement on "Scientific Certainty and Best Available Science"

Norgaard opened up this discussion by explaining that agenda items 4 and 5 were being merged, and stating his opinion that adaptive management, which is Chapter 2 of the second staff draft of the Delta Plan, will be long-lived if it is done well.

Resh expressed concern about the conflict in providing direct input on Chapter 2, "Science and Adaptive Management for a Changing Delta," to Correa at this time - if direct input regarding the revision of the chapter is given by the Delta ISB it may result in a conflict when the Delta ISB reviews it again as part of the Delta Plan. Norgaard agreed and stated the issue should be discussed by the Board. Hastings commented that she views the Delta ISB as a standing review panel and that there is a difference between advice and review.

Healey expressed concern that the Delta ISB is becoming a committee for writing/working on the Delta Plan; he felt that the Delta ISB should take the time to discuss how they plan to complete the review so that they remain a Science Board with oversight and not a working committee.

Wiens agreed that all of the members would like to have documents to review that utilize their collective scientific expertise. However, the Board needs to have some role in the development of the Plan, one of which could be pointing out the inadequacies in the Plan. He realized that this is not the role that they anticipated having.

There was agreement among the members that the Delta ISB should focus the meeting on a review of Chapter 2, stating that adaptive management will be the crux of Plan implementation. Norgaard stated that the Board needs to help with this phase even though it may reduce their independence as a review body. Healey noted that the Delta Plan will need to ensure that adaptive management plans developed for specific projects complement the Delta Plan's adaptive management process. Myer stated that the adaptive management chapter should include a discussion of the process to be followed when the scientific information is conflicting and suggested that Correa look at the weight of evidence discussion in CADDIS. Healey stated that active adaptive management should be used if the science is conflicting, and passive adaptive management when there are no conflicts. He cited the approach used in DRERIP.

The Board next discussed how adaptive management should be defined in Chapter 2. Wiens compared adaptive management to hypothesis testing, and posed several questions regarding the role of the null hypothesis and alternative hypotheses and stated that adaptive management needs to be "nimble." Norgaard stated that this is why monitoring is so important and Collier agreed that nimbleness is important but very difficult to do. Houde added that Wiens was suggesting a classic approach to adaptive management, but that it may not be the best approach for this

situation. Houde also suggested that the nimbleness of the planning may rely on the passive approach to adaptive management and that the chapter could be improved by writing in laymen's terms and include a discussion of hypothesis testing.

Dahm stated that staff would incorporate these ideas into the chapter and noted that performance measures, required by the Act, have not yet been developed. Collier stated that performance measures and adaptive management are anathema to each other while Meyer stated that performance measures are needed in order for adaptive management to work. Healey stated that adaptive management can be incorporated into other chapters if the policies are viewed as experiments with some lending themselves to passive adaptive management. Thinking about drivers, linkages and outcomes will lead to the development of performance measures. Irreversible manipulations require pilot approaches. Dahm responded that the performance measures that will be prepared for the ecosystem chapter will not be too specific or too general.

Meyer stated that performance measures require that monitoring programs be established. Collier said that monitoring should include an independent verification of results that is then used in the adaptive management process and that some standardized monitoring should be considered. Wiens stated that the Delta Plan is an opportunity to require monitoring as part of the adaptive management process. As performance measures need to be task/action specific, they cannot be expected to be developed as this stage of the Delta Plan. Canuel suggested that the Science Program look at the Chesapeake Bay program for ideas and to consider standardizing monitoring and data output. She also noted that the third step of the Adaptive Management diagram depends on conceptual models but she would like the chapter to include a discussion of other types of models.

After lunch, the Delta ISB focused on specific comments for revising the Science and Adaptive Management chapter of the second staff draft of the Delta Plan. The following highlights their key comments:

1. The term "performance measures" needs to be defined.
2. Norgaard, Healey and Wiens did not agree with the use of the term "continuous improvement" stating that systems that are in continual flux might not lend themselves to continuous improvement.
3. Some members felt that the discussion was too abstract and that it should include examples of "actions" that might actually occur in the Delta and how adaptive management would be applied to those actions. Atwater stated that the role of hypothesis testing and performance measures should also be included and Houde indicated that the chapter should include a discussion of setting targets and thresholds. Consensus was that a second figure should be added to complement Figure 1 that would make the process more "real."

4. All members agreed that monitoring needs to be further emphasized and that the chapter should state explicitly that monitoring results will be used in the adaptive management process.
5. There was some discussion regarding scoring levels of uncertainty and Meyer commented that the process used in the Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) developed an effective process for doing that. Wiens stated that adaptive management can be used to look ahead which requires a stronger role for the use of models and scenario analyses effectively building in the concept of anticipatory adaptive management. This would be helpful in addressing the impacts of climate change.
6. The Board felt that the discussion of baseline should be carefully considered as it must address variation in the system. The discussion should emphasize that the Delta is a highly variable system and that pre- and post-monitoring must be done at the appropriate spatial and temporal scales. And as the baseline cannot always be clearly established, Chapter 2 should include the phrase “to the extent practicable.” For many parameters, there is an extensive set of baseline data because of the efforts of the IEP.
7. The discussion of Best Available Science lacks a discussion of the need for a Science Plan or a plan to improve Best Available Science, the need to communicate the level of uncertainty, and a process for how conflicting interpretations of data will be handled. In the latter situation, “weight of evidence” should be considered. The management decision process could also be used to test different hypotheses. The Science Plan should also address the need for a comprehensive monitoring plan, data management, integration and synthesis, and communication that transcends different programs.
8. Additional discussion regarding definitions of Best Available Science resulted in a determination that the Delta ISB should not define the term at this time. Rather, once the Delta Plan is adopted, if the Delta ISB disagrees with how Best Available Science is defined, they will comment at that time.
9. Suggested revisions for Figure 2-1: make the monitoring plan its own box, and use the word(s) “respond” or “adapt” in place of “decide” because decisions are made throughout the process and require different skills. The critical aspect of adaptive management is reaching the point where one can respond and adapt.
10. Include simulation models in the discussion of types of models that can be used.
11. The use of alternative conceptual models and hypotheses should be addressed and discussed.
12. Table 2-1 Revisions: “Anecdotal Evidence” should be replaced with “Traditional Knowledge”, “General scientific reports and publications” should be replaced with “Other Scientific Reports and publications.” The first two rows regarding sources of science in this table should include “synthesis documents” in the content column.

Public comments on this agenda item provided by:

Connie Ford, Sacramento County Water Resources: Ford read a short section of the Delta Reform Act to the Delta ISB regarding Best Available Science. She then asked the Science

Board how they could bring in engineering reports to assist with integrating engineering components into the adaptive management component of the Delta Plan. Ford also read part of the Delta Risk Management Strategy (DRMS) report that said "...did not include supplemental data to fill gaps..." to make the point that the DRMS report was prepared based on incomplete data.

Jonas Minton, Planning and Conservation League: Minton commented on Figure 2-1 within the Science and Adaptive Management chapter of the second staff draft of the Delta Plan. He said that the Plan itself was absent of many of the steps shown in the figure, and that the Delta ISB may want to ask the Council to go through these steps themselves. Minton also said that he thought that the adaptive management chapter was a good textbook description of adaptive management, but that essentially it was just "lip service." He told the Delta ISB that the real issue is going to be the nine lines of text in the adaptive management chapter that address governance. The advice that Minton gave was that the Delta ISB needed to find ways to prevent money from being cut from the science and monitoring components when the budget is developed. In addition, he advised that if the scientific basis for a project is lacking, the project should not be implemented.

6. Public Comment (For matters that were not on the agenda, but within subject matter jurisdiction of the Delta ISB.)

Norgaard provided the public present the opportunity to comment, and no comments were made.

Adjourn: approximately 5:00 p.m. (PDT)

Day 2: April 8, 2011 - (8:30 a.m. – 11:30 a.m. PDT)

1. Welcome

The meeting was called to order at 8:30 a.m., April 8, 2011, by the Chair of the Delta Independent Science Board (Delta ISB), Dr. Richard Norgaard. Nine members of the Delta Independent Science Board were present: Brian Atwater, Tracy Collier, Michael Healey, Edward Houde, Judy Meyer, Jeffrey Mount, Richard Norgaard, and John Wiens. One member was on the call for the meeting: Vince Resh.

2. General Review and Refresher

This item was presented by Gina Ford, a Staff Environmental Scientist for the Delta Science Program.

- *WebEx – a new tool*
Ford explained that the Delta Science Program acquired a contract with WebEx for their online meeting services. Since the Delta ISB would be using it as a tool during public meetings, then all the private contact features would be turned off or disabled. And, that it was anticipated to be made available to the Delta ISB members only for a test-drive of the tool during the next scheduled meeting.
- *Pamphlet for SBX7-1: The Delta Reform Act*
Since the Delta Reform Act is the founding legislation for the Delta ISB, and often referred to during meetings, this pamphlet was provided for easy use.
- *Handy Guide to The Bagley-Keene Open Meeting Act 2004*
Ford told the Delta ISB that this pamphlet was last updated in 2004, and that there have been updates to the Act since that time. However, the main reason to provide the guide was to give the Board members a reference on the main points of the Act.

3. Break into small group work session(s) to Prepare Draft Comments

See notes under agenda item 4, as item 3 was merged with item 4 during the meeting.

4. Report out to larger group

Norgaard opened up this agenda item by explaining that agenda items 3 and 4 were being merged and that instead of reporting out to the larger group and public that this would be a discussion item to summarize their comments of the Science and Adaptive Management chapter of the second staff draft of the Delta Plan. Norgaard's reason for requesting that the group summarize their comments from the prior day was so that he could prepare comments to submit to the Council.

The initial discussion focused on "scale" with respect to adaptive management. Hastings indicated that this has been a subject for internal discussion as well with no clear resolution. There could be two levels of screening based on whether it is a covered action and if covered,

would it be required to include an adaptive management component. She noted that the third staff draft may include a flowchart for determining if/when an action is “covered”.

Discussion continued regarding the use of examples of adaptive management in Chapter 2. The conclusion was that case studies should be included if something can be learned from them and that consideration should be given to local and national examples as well as world-wide (Healthy Waterways).

Canuel, Houde and Meyer provided lists of the main comments made on the adaptive management chapter from the previous day’s discussion. The Delta ISB discussed all three of the Board member’s notes to consolidate them for Norgaard’s summary. These lists are included as attachments to this meeting summary. Wiens stated that if synthesis, integration and communication are not included, you will never be able to get out of the immediate adaptive management loop; the development of a monitoring plan is critical; and one does not necessarily have to have baseline data in order to conduct adaptive management, as other sources of information can be used in its place.

Wiens and Healey discussed the differences between passive and active adaptive management with Healey stating reservations about bringing this up to the Delta Stewardship Council and cautioned that if it is discussed, to present active and passive adaptive management as different levels of adaptive management. In active adaptive management, the system is pushed hard to elicit the greatest level of response and there should be a control to compare it to, whereas in passive adaptive management, there are fewer manipulations of the system. Healey also stated that the adaptive management plans prepared for individual projects should be consistent with each other so that when implementation of the entire Delta Plan is reviewed there is consistency in determining the success in meeting the coequal goals. Collier added that it would be preferable to have some independence in the monitoring through the use of third parties.

Norgaard stated that he would like to add a discussion of governance to their comments noting that there has to be strong integration among the Science Plan (which does not exist), adaptive management, and governance.

The Delta ISB unanimously gave Norgaard the authority to compile and finalize the full Board’s comments on the Science and Adaptive Management chapter of the second staff draft of the Delta Plan. Norgaard agreed to this and also agreed to provide them, upon completion, to the Delta Science Program staff for public posting and delivery to the Council.

5. Update: Lead Scientist Recruitment

Michelle Shouse of the U.S. Geological Survey (USGS) provided an update on the status of recruitment efforts to replace the Delta Science Program’s Lead Scientist.

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Shouse first provided a brief summary of the potential for the Federal government to shut-down due to budget issues. If it does occur, she explained that it would be effective at midnight on April 8th and would affect both her and Cliff Dahm's positions, rendering them unable to work.

Shouse then moved on to the Lead Scientist position recruitment update, and told the Delta ISB that the position description has been completed, and questions for candidates to answer during their application process have been written. Shouse asked Healey if he would be a tester of these questions since he had been a Lead Scientist in the past and would be a good indicator of the effective screening potential of the questions. Only candidates that score 85% or better will be considered eligible for the position. Healey agreed to respond to the questions as a test.

The Delta ISB asked questions about the application process, and also about the period of time that the Lead Scientist position would be advertised on USA Jobs. It was decided that the announcement would run for 30 days, once posted. Shouse anticipated posting the position in early May 2011. Once the posting is complete and out for 30 days, the USGS Human Resources office will provide a list of eligible candidates that can be contacted for interviews. If all goes well, she expected that June would be the earliest that interviews could occur. Norgaard stated that he was not comfortable with the timeline. Shouse agreed to send the recruitment flyer to Ford so that Ford could distribute it to Delta ISB members.

6. Public Comment (For matters that were not on the agenda, but within subject matter jurisdiction of the Delta ISB.)

Norgaard provided the public present the opportunity to comment, and no comments were made.

7. Preparation for next Delta ISB meeting

Members discussed agenda items for the April 25 teleconference and agreed that it should include how the Board will review the third staff draft of the Delta Plan, an update on the Lead Scientist recruitment efforts, and a report by the Delta Science Program Lead Scientist. They also agreed that they would discuss the third staff draft and create a plan of action for the remainder of the calendar year. On July 7-8, they agreed to review the version of the Delta Plan that would be out with the Draft EIR for public review.

Adjourn: approximately 11:20 a.m. (PDT)